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ABSTRACT

Part of the Dade County Public School (Florida) Quinmester Program, the automotive refinishing course outline is a continuation of automotive refinishing 1 and emphasizes the practical application of color coating and sheet metal refinishing. Overall refinishing with enamels, lacquers, and acrylics are included as well as spot repair painting and color matching. The course is a two or three quinmester credit course to be given in a 9-week period. Instruction consists of demonstrations, lectures, group discussions, audio visual aids, and resource people from industry. (EA)

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AUTHORIZED COURSE OF INSTRUCTION FOR THE

QUINMESTER PROGRAM

DADE COUNTY PUBLIC SCHOOLS

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Course Outline
AUTOMOTIVE BODY REPAIR AND REFINISHING 2 - 9035
(Automotive Refinishing II)
Department 48 - Quin 9035.05

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DADE COUNTY PUBLIC SCHOOLS
1450 NORTHEAST SECOND AVENUE
MIAMI, FLORIDA 33132

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Course Outline

AUTOMOTIVE BODY REPAIR AND REFINISHING 2 - 9035
(Automotive Refinishing II)

Department 48 - Quin 9035.05

county office of
VOCATIONAL AND ADULT EDUCATION

COURSE DESCRIPTION

<u>9035</u>	<u>48</u>	<u>9035.05</u>	<u>AUTOMOTIVE REFINISHING II</u>
State Category	County Dept.	County Course	Course Title
Number	Number	Number	

A continuation of Automotive Refinishing I (Course 9035.04) with emphasis on the practical application of color coating and sheet metal refinishing. Includes overall refinishing with enamels, lacquers and acrylics. Spot repair painting and color matching are also emphasized. This is a two or three quinmester credit course.

This course will be given in a 9-week period.

Indicators of success: The applicant must demonstrate an eighth grade equivalency score in reading and math. Also have average ability in mechanical aptitudes.

Clock hours: 135

PREFACE

The following quinmester course outline is a guide to help students become employable with skills, knowledge, attitudes and values necessary for performing the required services of the automotive body refinishing repairman.

This course is designed as a foundation quinmester course for the auto body repairman. This outline consists of 6 blocks of instruction which are subdivided into several units each. It is only one part of a series of quinmester outlines designed for the complete auto body repairman. This course is 135 hours in length.

Prerequisites for this course is as follows: The student should have an eighth grade equivalency score in reading comprehension, arithmetic fundamentals and mechanical aptitude. The student must be physically and mentally able to profit from this training.

Prior to entry into this course, the vocational student will display mastery of skills indicated in Automotive Refinishing I (9035.04).

Instruction will consist of demonstrations, lectures, group discussions and audio visual aids and resource people from industry. Instruction will be flexible to meet individual needs and abilities.

The bibliography appearing on the last page of this outline lists several basic references, also supplementary references and audio visual aids.

This outline was developed through the cooperative efforts of the instructional and supervisory personnel, the Quinmester Advisory Committee and Vocational Curriculum Materials Service and has been approved by the Dade County Vocational Curriculum Committee.

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with Suggested Hourly Breakdown

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GOALS

The auto body trainee must be able to demonstrate:

1. Safe work habits and proper shop behavior to guard against accidents.
2. Positive attitude regarding the value of work.
3. Pride and respect for craftsmanship for this occupational field.
4. The skills and knowledge to select and use tools and equipment of the auto body and refinishing profession.
5. An incentive to continue with more advanced training within this occupational field.
6. The skills and knowledge to identify and explain the functions of the automotive spray paint equipment.
7. The skills and knowledge to explain function and use of paint spray guns.
8. The ability to explain function and use of paint respirators.
9. The skills and knowledge to explain function and use of paint buffers.
10. The ability to describe and explain function of paint spray booth.
11. The ability to describe and explain function of paint drying booth.
12. The skills and knowledge to explain the function and use of foundation material.
13. The ability to explain the function and use of sealers.
14. The skills and knowledge to describe and name materials for overall refinishing.
15. The skills and knowledge to prepare the automobile body for refinishing.
16. The skills and knowledge to prepare and perform spot refinishing.
17. Satisfactorily complete quinmester sample post test.

SPECIFIC BLOCK OBJECTIVES

BLOCK I - ORIENTATION

The student must be able to:

1. List the opportunities that are available for career in the auto body and refinishing occupational field by written assignment.
2. Demonstrate skills and knowledge which will prepare him for a safe working life by his actions in shop or laboratory.
3. State what will be expected of him as an auto body repairman and painter by written assignment.
4. Demonstrate pride and respect for workmanship by his attitude and performance in shop or laboratory.
5. Demonstrate understanding and acceptance of personal responsibilities by written assignment.
6. Demonstrate an understanding of shop organization by oral or written examination.

BLOCK II - SERVICE TOOLS AND BENCH SKILLS

The student must be able to:

1. Identify and explain function of general type of hand tools by oral test and shop practice.
2. Exhibit the ability to practice maintenance and safety in the uses of automotive hand tools by following written instructions.
3. Demonstrate the ability to identify power tools by oral examination.
4. Exhibit the ability to perform care and maintenance of power tools by his actions in shop or laboratory.
5. Demonstrate the ability to practice safety precautions by observing shop rules and practices.
6. Exhibit the ability to use correctly the proper measurements by following mixing formulas on paint container.
7. Demonstrate the ability to reduce and mix paint by following oral or written instructions.

BLOCK III - SPRAY PAINT EQUIPMENT

The student must be able to:

1. Demonstrate the ability to identify the types of air compression by oral or written examination.

BLOCK III - SPRAY PAINT EQUIPMENT (Contd.)

2. Exhibit the ability to describe function of air compressor by written examination.
3. Demonstrate the ability to identify air transformers by study of text and manuals.
4. Exhibit the ability to describe function and maintenance of air transformer by following oral or written instructions.
5. Demonstrate the ability to observe safety precautions by following written instructions.
6. Exhibit the ability to identify types of air hose and fittings by following oral instructions.
7. Exhibit the ability to perform maintenance and observe safety rules in the use of air hose and fittings by his performance in shop.
8. Demonstrate the ability to identify the types of paint spray guns by study of text and manuals.
9. Exhibit the ability to disassemble and assemble paint spray guns by actual shop practice.
10. Demonstrate an understanding of care, maintenance and safety in the use of paint spray guns by his actions in shop.
11. Demonstrate an understanding of spray paint accessories by identification and use.
12. Exhibit the ability to maintain and observe safety precautions in the use of spray paint accessories by his actions in shop or laboratory.
13. Demonstrate an understanding of buffers and polishers by study of text and shop manuals.
14. Demonstrate an understanding of spray paint respirators and their function by actual use and oral instructions.
15. Exhibit the ability to observe safety precautions and perform maintenance to buffers and polishers by actual shop practice.
16. Demonstrate an understanding of paint spray booths by study of text and manuals.
17. Exhibit the ability to observe safety precautions and perform maintenance on paint spray booths by his actions in shop or laboratory.
18. Demonstrate an understanding of spray paint drying booth by study of text and shop manuals.

BLOCK III - SPRAY PAINT EQUIPMENT (Contd.)

19. Exhibit the ability to maintain service and safety precautions by his actions in shop or laboratory.

BLOCK IV - FOUNDATION MATERIALS

Student must be able to:

1. Demonstrate an understanding of the function and use of primer surfacer by study of text and paint manuals.
2. Exhibit the ability to mix and spray primer surfacer by actual shop practice.
3. Demonstrate an understanding of safety and health hazards by following oral and written instructions.
4. Demonstrate an understanding of the function and use of sealers by study of text and paint manuals.
5. Exhibit the ability to mix and spray sealer by actual shop practice.
6. Demonstrate an understanding of health and safety precautions when spraying sealer by his actions in shop.

BLOCK V - OVERALL REFINISHING

Student must be able to:

1. Demonstrate an understanding of the different types of enamel material by study of text and paint manuals.
2. Demonstrate the ability to reduce, mix and spray enamel paint by actual performance.
3. Demonstrate an understanding of health and safety precautions by observing rules and regulations.
4. Demonstrate an understanding of lacquer paint materials and their use by study of text and paint materials.
5. Exhibit the ability to reduce, mix and use lacquer paint by actual performance.
6. Demonstrate an understanding of health and safety precautions by written test.
7. Exhibit the ability to prepare automobile body for painting by actual performance.
8. Demonstrate an understanding of the techniques of spraying enamel by shop practice.

BLOCK V - OVERALL REFINISHING (Contd.)

9. Demonstrate an understanding of the technique of spraying lacquer by shop practice.
10. Exhibit the ability to remove masking tape and paper by actual performance.
11. Demonstrate the ability to buff and polish lacquer paint job by actual shop performance.
12. Demonstrate an understanding of spot refinishing by following oral instructions.
13. Demonstrate an understanding of paint problems and failures by study of text and paint manuals.
14. Exhibit the ability to strip old finish from automobile body by following oral instructions and actual performance.

BLOCK VI - QUINMESTER POST-TEST

The student should be able to:

1. Satisfactorily complete the quinmester post-test.

Course Outline

AUTOMOTIVE BODY REPAIR AND REFINISHING 2 - 9035 (Automotive Refinishing II)

Department 48 - Quin 9035.05

I. ORIENTATION

A. Objectives of Course

1. Standards
2. Methods of evaluation
 - a. Diagrams and job performance
 - b. Written test
 - c. Oral test
 - d. Manipulation
3. Safety
4. Teaching methods

B. Student Benefits

1. Opportunities for employment
 - a. Scope of trade
 - b. Opportunities for employment
2. Qualification for employment
 - a. Dependability
 - b. Attitude
 - c. Pride of workmanship
 - d. Experience
 - e. Trade certificate
 - f. Job competency
 - g. Foundation for more education and training

C. Student Responsibilities

1. Safety regulations
2. School policies and expenses
3. Shop rules and procedures
 - a. Use and care of equipment
 - b. Care of hand tools
 - c. Housekeeping
 - d. Appropriate dress
 - e. Materials and supplies
 - f. Reporting loss of equipment
 - g. Reporting defective equipment
 - h. Employee-employer relations
 - i. Employer-customer relations

II. SERVICE TOOLS AND BENCH SKILLS

A. Automotive Hand Tools

1. Uses and safety precautions
2. Types and sizes
 - a. Sanding blocks
 - b. Wrenches
 - c. Screw drivers
 - d. Molding tools
 - e. Putty knife

II. SERVICE TOOLS AND BENCH SKILLS (Contd.)

B. Automotive Power Tools

1. Types and sizes
2. Use and safety precautions
3. Maintenance
 - a. Sanders
 - b. Spray guns
 - c. Drills
 - d. Lifting devices
 - e. Air impact wrench

C. Measurements

1. Use of weight
2. Use of liquid
 - a. Mixing paint material
 - b. Reducing paint material

III. SPRAY PAINT EQUIPMENT

A. Air Supply System

1. Compressors
 - a. Types
 - b. Sizes
 - c. Operation
 - d. Ratings
 - e. Nomenclature
 - f. Maintenance
 - g. Safety precautions
 - h. Shop installation
 - i. Air lines
2. Air transformers
 - a. Types
 - b. Sizes
 - c. Function
 - d. Care and maintenance
 - e. Nomenclature
 - f. Maintenance
 - g. Safety precautions
3. Air hose and fittings
 - a. Types
 - b. Sizes
 - c. Function
 - d. Care and maintenance
 - e. Safety precautions

B. Paint Spray Guns

1. Sizes
2. Types
 - a. Internal mix
 - b. External mix
 - c. Pressure
 - d. Suction

III. SPRAY PAINT EQUIPMENT (Contd.)

- 3. Care and maintenance
 - a. Disassembling
 - b. Cleaning
 - c. Assembling
 - d. Adjusting
 - e. Nomenclature
 - f. Safety precautions
- 4. Accessories
 - a. Blow guns
 - b. Adjusting valve
 - c. Hose
 - d. Care and maintenance
 - e. Safety precautions
- C. Paint Respirators
 - 1. Types
 - 2. Manufacture
 - a. Materials
 - b. Function
 - c. Uses
 - d. Safety precautions
- D. Paint Buffers and Polishers
 - 1. Types
 - 2. Sizes
 - 3. Manufacture
 - a. Air
 - b. Electric
 - c. Function
 - d. Techniques
 - e. Safety precautions
- E. Spray Booths
 - 1. Types
 - 2. Sizes
 - 3. Manufacture
 - a. Dry
 - b. Water
 - c. Forced air
 - d. Function
 - e. Maintenance
 - f. Safety precautions
- F. Drying Booths and Accessories
 - 1. Manufacture
 - 2. Types
 - 3. Sizes
 - a. Drive through
 - b. Heat
 - c. Portable type
 - d. Power traveling type
 - e. Maintenance
 - f. Safety precautions

IV. FOUNDATION MATERIALS

A. Primer-Surfacer

1. History and development
2. Types
3. Manufacture
 - a. Lacquers
 - b. Enamel
 - c. Function
 - d. Reduction
 - e. Application
 - f. Sanding
 - g. Drying time
 - h. Safety and health hazards
 - i. Spraying techniques

B. Sealers

1. History and development
2. Types
3. Manufacture
 - a. Lacquer
 - b. Enamel
 - c. Function
 - d. Application
 - e. Reduction
 - f. Sanding
 - g. Drying time
 - h. Safety and health hazards
 - i. Spraying techniques

V. OVERALL REFINISHING

A. Materials

1. Enamel
 - a. Types
 - b. Finishes
 - c. Reducers
 - d. Reduction
 - e. Spraying techniques
 - f. Safety and health hazards
2. Lacquers
 - a. Types
 - b. Finishes
 - c. Thinner
 - d. Reduction
 - e. Spraying techniques
 - f. Safety and health hazards

B. Preparation for Paint

1. Enamel finish
 - a. Overall sanding
 - b. Clean up
 - c. Masking
 - d. Priming

V. OVERALL REFINISHING (Contd.)

- e. Sealing
- f. Mixing paint
- g. Straining paint
- h. Tacking
- 2. Spray painting enamel
 - a. Procedures
 - b. Spray pattern
 - c. Air pressure
 - d. Techniques
 - e. Drying time
 - f. Safety and health hazards
- 3. Spray painting lacquer
 - a. Procedures
 - b. Spray pattern
 - c. Air pressure
 - d. Techniques
 - e. Drying time
 - f. Safety and health hazards
- 4. Clean up
 - a. Removing masking paper
 - b. Detail procedures
 - c. Buffing and polishing (lacquer)
 - d. Replace moldings and emblems
- 5. Spot refinishing
 - a. Featheredging
 - b. Priming
 - c. Sanding
 - d. Compound polish
 - e. Mixing paint
 - f. Spraying
 - g. Blending
 - h. Drying time
 - i. Buffing and polishing
- 6. Painting problems
 - a. Peeling
 - b. Blistering
 - c. Blushing
 - d. Crackling
 - e. Line checking
 - f. Micro-checking
 - g. Crazeing
 - h. Featheredge cracking
 - i. Lifting
 - j. Matting
 - k. Orange peel
 - l. Fish eye
 - m. Pinholing
 - n. Sags or runs
 - o. Sandcratch swelling
 - p. Shrinking of putty
 - q. Wrinkling of enamel

V. OVERALL REFINISHING (Contd.)

7. Stripping old finish
 - a. Grinding
 - b. Sand blasting
 - c. Paint remover
 - d. Sanding

VI. QUINMESTER POST TEST

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3. Hobson, W.T. Automotive Refinishing, Second Edition. E.I. Dupont DeNemours and Company. Delaware: Refinishing Division. Pp. 120.
4. Tobolt, Bill. Auto Body Repairing and Painting. Homewood, Illinois: Goodheart-Wilcox Co., 1965. Pp. 224.

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5. Hobson, William T. Dupont Refinishing News. Wilmington, Delaware.

APPENDIX

QUINMESTER POST-TEST SAMPLE

QUINMESTER POST-TEST

NAME _____ DATE _____ SCORE _____

The following items are multiple choice. Each statement needs a word, figure or phrase to make it correct. Only one of the choices listed is correct. Circle the letter of your choice you believe correct.

1. When seeking employment you should:
 - a. search newspaper advertisement
 - b. call state employment office
 - c. call or see places of business
 - d. all of above
2. When applying for a position, you should:
 - a. go at your convenience
 - b. wear work clothes
 - c. dress neatly and be prompt
 - d. none of above
3. If for any reason you leave a place of employment you should:
 - a. notify employer in advance
 - b. pack up tools and leave
 - c. phone employer, tell him you have quit
 - d. all of above
4. To qualify for a position you should have:
 - a. experience
 - b. proper attitude
 - c. job competency
 - d. all of above
5. If you should break a piece of employment you should:
 - a. put it away and say nothing
 - b. try to repair it yourself
 - c. report it to instructor
 - d. put the blame on other students
6. The bleeder type spray gun is used with:
 - a. large compressor with storage tank
 - b. small compressor without storage tank
 - c. either one
 - d. neither one

7. The paint spray gun commonly used in repair shops is:
 - a. a separate container and gun
 - b. a gun and container combined
 - c. a bleeder type and small compressor
 - d. none of above
8. After spraying lacquer the paint gun should be cleaned with:
 - a. mineral spirits
 - b. enamel reducer
 - c. lacquer thinner
 - d. gasoline
9. The oil level should be checked in air compressor:
 - a. once a week
 - b. once a month
 - c. once every six months
 - d. once a year
10. The function of an air transformer is to:
 - a. regulate air pressure
 - b. remove oil
 - c. remove dirt and water
 - d. all of above
11. The function of paint respirators is to:
 - a. filter dust
 - b. protect eyes from paint fumes
 - c. strain paint
 - d. none of above
12. The function of the paint spray booth and filters is to:
 - a. eliminate dust
 - b. exhaust paint spray mist
 - c. keep paint from collecting dust after spraying
 - d. all of above
13. The function of primer surfacer is to:
 - a. fill sand scratches
 - b. act as bonding agent for paint
 - c. build up repaired areas
 - d. all of above

14. Glazing putty is used to:
- a. fill chipped paint
 - b. fill deep scratches
 - c. fill pin holes
 - d. all of above
15. The function of sealer is to:
- a. seal old finish to prevent blistering
 - b. prevent wax from coming through
 - c. hold down sand scratches and prevent old finish from absorbing paint
 - d. none of above
16. When reducing lacquer paint the following formula should be used:
- a. 1 qt. thinner to gallon of paint
 - b. follow directions on can of paint
 - c. 2 qts. thinner to one gallon of paint
 - d. 8 qts. thinner to one gallon on paint
17. The following are several safety factors which should be adhered to:
- a. safety goggles or gloves
 - b. respirators
 - c. rubber gloves
 - d. all of above
18. When an automobile body has to have the paint completely removed, the following methods can be used:
- a. use paint remover
 - b. grind off paint with disc grinder
 - c. sand blast
 - d. all of above
19. Silicone tar and wax remover is used to:
- a. clean dust and dirt from automobile
 - b. clean tar and wax from automobile
 - c. remove old weathered paint from automobile
 - d. soften paint
20. The most popular width masking tape is:
- a. $\frac{1}{2}$ inch
 - b. $\frac{3}{4}$ inch
 - c. 1 inch
 - d. $\frac{1}{4}$ inch

21. When removing masking tape from car, it should:
- a. be removed immediately after spraying
 - b. wait until paint is sufficiently dry
 - c. wait at least one week
 - d. none of above
22. Which of the following operations is first when preparing automobile for paint:
- a. mask all moldings and glass
 - b. wet sand with 320 sand paper
 - c. wash thoroughly with silicone wax remover
 - d. feather edge
23. When spraying enamel the paint gun should be held:
- a. 18-20 inches away from surface
 - b. 8-10 inches away from surface
 - c. 4-6 inches away from surface
 - d. 12-14 inches away from surface
24. Air pressure at the gun for spraying acrylic lacquer is:
- a. 30-40 lbs
 - b. 65-70 lbs
 - c. 50-55 lbs
 - d. 35-40 lbs
25. Air pressure at the gun for spraying acrylic enamel is:
- a. 25-30 lbs
 - b. 50-60 lbs
 - c. 75-80 lbs
 - d. 85-90 lbs

QUINMESTER POST-TEST ANSWER SHEET

1. d
2. c
3. a
4. d
5. c
6. b
7. b
8. c
9. a
10. d
11. a
12. d
13. d
14. d
15. c
16. b
17. d
18. d
19. b
20. b
21. b
22. d
23. b
24. c
25. b